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Relevance of Academic Research in information technology and information management

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Relevance of Academic Research in information technology and information management

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Purpose
The purpose of this article is to examine the relevance of academic research, in terms of topic match, to commercial practice in information technology, using the case study of a large and very rapidly growing supplier that uses leading edge management approaches, Salesforce.com.

Design/methodology/approach
Academic literature review and review of commercial literature and information published by Salesforce.com.

Findings
Academics choice of topics matches the issues and topics present in the development of Salesforce.com, but suffers from the lack of interdisciplinary approach, and particularly fails to integrate technical, marketing and financial approaches.

Research limitations
The case study is of only one company, though an important one, although other large companies are involved e.g. Amazon Web Services. However, the approach could easily be widened to several companies.

Practical implications
The case study approach will help academics focus on creating more applicable research, and help students to learn about companies, and may also eventually help practitioners to create thought leadership.

Social implications
If the financial and economic aspects of such case studies are integrated with other business aspects, these will provide a better view of the positive (or negative) contribution made by companies such as the one in the case study.

Originality/value
This is the first time that a case study has been examined in the context of the relevance/rigour debate.

Keywords
Salesforce.com, customer relationship management, cloud computing, software as a service, app development, platform.

Paper type
Conceptual

Background

In general, research is "relevant when it addresses the needs of one of a number of different stakeholders" (Rosemann and Vessey, 2008, p. 1). Bhattacherjee (2001, p. 28) concludes that information system research should address the concerns of multiple stakeholder groups (e.g. academic researchers and teachers, businesses, governments, in order to "have broader relevance among a wider community of information system academicians and practitioners, and is certainly the preferred way of conducting research". According to Rosemann and Vessey's (2008, p. 1) the most comprehensive but critical dimension for practice in information system research "is the importance of the research to the needs of practice". "Relevance and impact can be pursued in many different ways, depending on the particular research genre" (Te'eni *et al.*, 2017, p. 541). Making precise and "accurate prescriptions is largely absent in business and information systems (IS) research – notwithstanding their palpable practical orientation and alleged relevance" (Seidel and Watson, 2014, p. 1). However, the creation and application of knowledge evolves steadily, and technological development paved the way to develop and reorganize research processes (Science Europe, 2016, p. 3). Furthermore, digitalization and globalisation are ubiquitous but constantly changing and "societal values and expectations towards publicly-funded research also evolves, as do the societal challenges addressed by science" (Science Europe, 2016, p. 3).

Research in information systems should be relevant to practitioners, not just rigorous in researchers' views, particularly in relation to designing research and presenting results in a practitioner-friendly way, but also investigating topics of interest to practitioners and using senior managers instead of unexperienced people as experimental subjects (Lee, 2000). Doing field studies instead of laboratory studies is also important, while information systems researchers should recognize the impact of the social and political context on the success or failure of {their} research" (Lee, 2000).

Rigour and relevance in information systems research

Simon (2004, p. 2) defines rigor in general as the "degree to which a work follows prescribed procedures for conducting research and producing results". Whereas relevance cannot be defined easily, mainly because of its "subjective nature" (Simon, 2004, p. 2). Thus, some argue that the selection of topics that might be interesting for practitioners makes research relevant, while others argue that the relevance comes from the research results and findings, and if these are applicable to practice (Simon, 2004, p. 2). But Kock *et al.* (2002, p. 331) highlight that a major item in information system research relevance discussions is missing: "a definition of what {information system} research relevance means". Although relevance is often defined and equated with direct information system applicability of research results "the theoretical foundations on which such research builds are seen as almost irrelevant when published" (Kock, Gray, Hoving *et al*., 2002, p. 331).

In the context of Information Systems, rigor and relevance is dependent on the involved academic and practitioner community, the applicability of the type of research and the choice of the publication channel and journal (Simon, 2004, p. 3). The following table depicts the differentiation of each dimension from rigor- and relevance point of view.

Table 1.1: Rigor and Relevance in Information Systems (own presentation; modified, according to Simon, 2004, pp. 3-5; Paper, 2014, pp.1-6)

<table>
<tr><td rowspan="5">Rigor</td><td colspan="2">Academic- and practitioner communities</td><td rowspan="5">Relevance</td></tr>
<tr><td>The role of academic communities indicates to produce several commodities, "including qualified students and 'basic' research findings that expand the body of knowledge" (Simon, 2004, p. 3).</td><td>The relevance position indicates that the difference in academic communities is that research must produce applicable and operational findings, which can be directly implemented by the practitioner community.</td></tr>
<tr><td colspan="2">Applicability of the type of research</td></tr>
<tr><td>It is suggested that academics should conduct "basic" research with the main purpose of building knowledge. Further extended, using classic scientific methods as experimentations and observations.</td><td>Applied research is considered as the best fitting approach, and results must be directly applicable for practitioners. This argument gets supported by the usage of social science methodologies.</td></tr>
<tr><td colspan="2">Choice of Publication Channel and Journal</td></tr>
</table>

	In general, academics place their effort where they yield the most return. Usually the most rigorous Universities publish in "A" tier journals. Therefore, Simon (2004, p. 4) recognised that most rigorous journals are not read by practitioners.	However, Simon (2004, p. 4) refers to an examination of top ranked journals, finding that the majority accepted basic research, using "scientific methods for design, collection, and analysis of data".	
	Despite strong arguments from both sides, the information system "community finds itself no closer to a definitive answer" (Simon, 2004, p. 4).		

The speed of change plays a significant role as research create extensive literature reviews, and time-consuming analysis of the data. Therefore, practitioners "are concerned with daily operations, the solution to immediate term problems/opportunities, and the impact on their business – which translates to the 'bottom line'" (Simon, 2004, p. 6).

In the context of rewards, academic research and practitioner operate under different reward schemes and therefore different motivating factors. Mainly driven by incentives to achieve targets or completing projects within the given budget, practitioners get motivated by topics that can assist them in achieving those, which leads to promotion, regardless of their origin (Simon, 2004, p. 6). Academic researchers' motivation mainly comes from the goal to publish in top tier journals, with high academic standards and academic rigor. There are insignificant incentives for academic research to publish in practitioner targeted journals, which seek a higher degree of relevance. Critics say that increase in relevance comes at the expense of rigor, leading to thinking about "what changes might be in store if academics were rewarded for ideas that business could translate directly into cost savings, improved productivity, or enhanced effectiveness" (Simon, 2004, p. 6). As Aguinis *et al*. (2020, p. 148) put it, "a-journal mindset has taken hold and become institutionalized over the past few decades as business schools responded to increasing pressure to measure the value of their research for performance management and accountability purposes" (moving research beyond top tier journal strictures. Pearson *et al*. (2005, p. 60) identify that while that information systems and information technology practitioners are "very enthusiastic about providing insights into problems they are currently facing", the solution must be relevant for information technology practitioners, and the lead time from submission to publication should be shortened.

Missing relevance?

Serenko and Turel (2010, p. 182) identify that information systems research is "often criticized for its high rigor, but low relevance" and suggest that one approach to "overcome the low relevance issue is to employ sound qualitative methods". Pearson *et al*. (2005, p. 52) emphasize that this "is especially true in the rapidly evolving field of Information Systems (IS) {and} Information Technology (IT)". Weinberg (2001, p. 100) concludes that Management Information Systems research can play a significant role in business and that the key for achieving this relevance is "leveraging the academic perspective, and the interpretation of results using communication media appropriate for business people". He states, that from business perspective, research will be considered as important and relevant, if the application of the findings results in 1) improved customer service, 2) increased market share, 3) reduced costs or 4) market differentiation (Weinberg, 2001, p. 99). Furthermore, if investments include front-end research costs, "relevance of research implying longer term results can be established" (Weinberg, 2001, p. 99).

Olfman (2001, p. 75) maintains that "practitioners are interested in research". Dennis (2001, p. 41-42) supports this opinion and further highlights the importance of balancing "the tension between knowledge exploration and knowledge exploitation". He distinguishes between so called "priests" and "soldiers". The "priests of research purity are the explorers who create deep knowledge {…}. The soldiers of organizational performance are the exploiters who disseminate and apply that knowledge in the pursuit of improved organizational practice" (Dennis, 2001, p. 41).

Moeini *et al*. (2019, p. 196) suggest that "IS strategy research has offered the potential for practical relevance in the past and recommends opportunities to increase this, especially in the digitalization era". However, Teubner (2007, p. 105) identified that senior IT managers and Chief Information Officers see academic research on Strategic Information Systems Planning as inspiring, but with hardly any impact. Moeini *et al.* (2019, p. 197) examined in detail "what factors

make a research project more conducive to having practical relevance". For clarification, they distinguish three potential practical relevance, from 1) perceived research relevance by practitioners, 2) use of research in practice, and 3) realized research impact. Based on previous research, they created a framework with four dimensions 1) topic selection, 2) knowledge product creation and 3) knowledge product translation, and 4) knowledge product dissemination.

1) **Topic selection**: Four factors are defined in this first framework dimension. Firstly, it must be ensured that the topic fits with practitioners' concerns. The research project should address information system strategies related issues and should practitioners' interests and concerns into account (Moeini *et al*., 2019, p. 198; Grover and Sabherwal, 1989). Secondly, the topic should be timeless, which refers to durable theory or topic. Thirdly, in line with a durable timeless topic, a real-world, practical problem should be addressed to attract the IT manager, rather than filling out academic research gaps. Fourthly, practically oriented problem framing is the theory to ensure timeless and practical research. Including the practitioners from early stages, by, for example, "citing practitioner-oriented publications to support problem existence" (Moeini *et al*., 2019, p. 199). Fifthly, it is helpful that research authors have professional experiences, and information systems relevance "must in some form or another be exposed to the practical context where IT-related usage and management behaviors" (Benbasat and Zmud, 1999, p. 6) comes together. Benbasat and Zmud (1999, p. 6) suggest that "such exposure tends to occur infrequently and, when it does occur, tends to be insufficiently targeted, insufficiently rich, or both". Addressing this will increase the relevance. Multi-disciplinary co-authorship is critical (Moeini *et al*., 2019, p. 199).
2) **Relevance in knowledge product creation**: This includes practice-oriented research design, -data collection and -data analysis, which, if conducted correctly increases relevance. McKelvey (2006, p. 824) states that finding ways "to significant advances, to get academics closer to the practitioners' phenomena, to get practitioners in touch with academic concerns, and to conduct longitudinal research". Practical inclusion also refers and includes the level of effort "dedicated to analysing and interpreting the data in the light of practical considerations" (Moeini, Rahrovani and Chan, 2019, p. 200).
3) **Relevance in knowledge product translation**: Research should raise attention for practical implications and should highlight usability. Furthermore, it should take into account how far IT managers and Chief Information Officers can use knowledge products to the benefit of business and economy and society (Mason, 2001). Readability and usability in style are also important. Impactful communication depends on "simplicity, unexpectedness, concreteness, credibility, emotion, and stories" (Gill and Bhattacherjee, 2009, p. 226).
4) **Relevance in knowledge product dissemination:** Dissemination and distribution of the results and created knowledge, in this final stage of the framework should reach the right audience in particular disciplines (Gill and Bhattacherjee, 2009, p. 218). Especially effectful if distributed in early stages as well as using diverse channels to attract and reach the right audience.

Without the initial matching (the first two steps), there is not much purpose in translation and diffusion. The first two are the subject of this article.

The role of journals – an obsession?

Much of the debate on relevance has focused on the role of academic journals. There is an assumption by many writers that journals are the only or the main channel by which ideas and knowledge should flow to practitioners from academics. We lean towards a very different view, that whatever their origin or intentions, academic journals in marketing perform very different functions, including being a location for:

- Production of new concepts.
- Refinement of concepts.
- Confirming that recently developed theories/concepts are valid.
- Confirming that older concepts should be discarded or used less often or in fewer/different situations (men of practice may be slaves to old ideas.
- Popularisation of existing concepts amongst the academic community.
- Evolution of research methods.
- Sharpening of authors' analytical and research skills.
- Grading of researchers' efforts.

- Providing a theoretical or conceptual basis for academic popularisers to develop more popular versions that are more accessible to practitioners.

Many of these roles are best seen in the context not of immediate practicality but in their role in the history and diffusion of ideas. The ones that reach very high levels of citation are often popularising ones, literature reviews or methodological ones, all of which probably have significant influence through one or more of the above functions. These suggestions, if correct, already have significant implications for the way academic journals manage their contributions, in terms of identifying their value and/or contribution. For this reason, these functions need to be researched more.

The wider knowledge ecosystem

The role of analysts

Academics are just part of the knowledge ecosystem that generates information about the business world (Tzempelikos, 2020). For example, analysts and consultancies play an important role in describing and forecasting the evolution of the information industries (Stone *et al*., 2017b) and so in defining topics that would be of interest to practitioners. Most leading analyst firms produce publicly available overviews of their analysis and their forecasts, and these give a reasonable indication, at a high level, of what academics need to research if they want to stay relevant. For example, IDC's (2020) "Futurescape" includes predictions relating to

- Rapid growth in IT spending on digital transformation and innovation.
- Integration of cloud management across their public and private clouds.
- Growth of enterprise IT infrastructure outside corporate data centres.
- Rapid growth in app development by client-side enterprises.
- Rapid growth in industry-specific apps.
- Embedding of artificial intelligence in nearly all apps, with most user interfaces using AI-enabled computer vision, speech, natural language processing (NLP), and augmented/virtual reality (AR/VR).
- The appointment of chief trust officers.
- Most large companies will become platforms with their own developer ecosystems with thousands of developers.
- The rise of "mash-ups" that combine digital services from previously unlinked industries, supporting by partnering across industries.
- Even greater dominance of cloud mega-platforms.

Accenture (2020) publication focuses on similar topics. A clear research agenda could be worked out using each of these documents, or any of the similar documents produced by other analysts in the explosion of grey literature about the information technology and related industries (Tzempelikos *et al*., 2020), consultancies, systems suppliers, marketing agencies or the trade press. This is one of our current research projects and more will be published on how to use such information in developing a research agenda, including the kind of research questions that need researching. At this stage, our recommendation is to synthesize the views of the different parties in the knowledge ecosystem (see below).

The overlapping knowledge ecosystem

Much of the writing about relevance tends to assume that academics and practitioners constitute two different groups, but this is not the case, as one of the authors himself is an example of someone who has combined practitioner and academic careers and published substantially as a result (e.g. Cerasale and Stone, 2004; Foss and Stone, 2002; Foss, B. and Stone M. 2010 – all books sponsored by IBM. We have not identified whether anyone has researched this topic, but it is clear from our literature review that some of the authors came from the practitioner side e.g. Rickmann *et al*. (2014). The focus on thought leadership production, identified by Tzempelikos et al (2020) increases the incentive for practitioners to develop the capability to generate thought leadership through their involvement with universities, for example, by taking postgraduate degrees, becoming research fellows etc.

Optimism?

In our (perhaps optimistic) view, there is a considerable flow back and forth between academia and business in information technology and management, but it takes place in many different ways, with many degrees of effectiveness, and not usually involving journals. The types of flows occur in (at least) the following ways

- During the education process, with students studying business, either as young students or as experienced professionals), whether through the concepts appearing in textbooks or articles that students read.

- Academics developing case studies for teaching or research.
- Practitioners attending conferences in which academics speak.
- Practitioners reading "pop" academic journals, where ideas are popularised e.g. HBR, Fortune, and semi-pop ones
- Analysts (market research, financial, IT) using the concepts – often from publications which popularise academic concepts – in their analysis of firms.
- Practitioners buying the market research/analysis reports which use the concepts.

The wrong question asked – a case study answer

In our opinion, the wrong question is asked. It is not whether the research and concepts produced from it are relevant, but the other way round – do the main new concepts that have appeared in the field of information management and technology, or those closely related, bring something new to managers' ability to manage their business. To test these aspects of relevance, we used a case study approach, examining a very large and rapidly growing company, Salesforce.com, in the context of the industry developments of which it forms a part, the move from application service provision in the world of on-premise packaged software to cloud-based software as a service, and an app-developing ecosystem. Salesforce.com was chosen because it is the fastest growing of the US platform companies and one considered by analysts to illustrate best the application of the latest information technologies (IDC, 2020).

Case study's background – cloud computing and information management

The cloud approach is particularly valuable in marketing, sales and service, which in large organisations are characterized by thousands of users, including often customers themselves accessing the company's information systems through the company's website. The general advantages of limitless capacity that can be scaled up or down to handle surges and troughs in activity, global access and support, immediate updating of software, and safety in storage worked very well in sales, service and marketing. The term "cloud" was first used in 1996, though became much more popular in 2006 when companies such as Google and Amazon started to use it. Amazon had developed a cloud approach for its own operations and launched it as a service for third parties in 2006 as Amazon Web Services, whose Simple Storage Service became the model for pay as you go usage. Google Docs free service made the cloud much more popular with consumers and small businesses, and Microsoft's own version, Azure, was launched in 2008.

According to a report by IDC, commissioned by Salesforce.com (Gantz, 2019), software delivered by cloud computing will account for over half of software sales by 2024 and 60% of organizations being past the experimental stage of deployment, with one in seven reported being cloud native, with the major benefits of moving to the cloud including the freeing up of resources for innovation, facilitating digital transformation, increased agility and improved customer experience.

What is Salesforce.com?

Broadly, Salesforce (SF) is an integrated CRM cloud-based platform for managing sales and service to customers, marketing and many other areas (Salesforce.com, 2020a). It was founded in 1999 focusing on sales automation software, and started marketing later that year. The company went public in 2004 on the New York Stock Exchange. Its move to becoming a fully cloud-based supplier took place in 2014 when it launched its Customer Success Platform, including sales, service, marketing analytics and mobile apps. The opening of interfaces to allow customers and third-party providers to develop their own apps was launched in 2015 as Salesforce Lightning, a collection of design patterns, components and guidelines for creating a unified User Interface in the Salesforce Ecosystem, Salesforce.com is now the largest supplier of customer relationship management (CRM) capabilities in the world, having taken over the position from others such as Siebel (owned by Oracle). Its revenue at the time of writing was $17.1 billion, up 29% over the previous year, with nearly 50,000 employees. Comparisons with other providers identify that the open app development process supported by Salesforce.com is an important advantage, but also that the development and/or acquisition of AI, visualization, block chain and other key technologies are reinforcing this advantage. This is confirmed by various analyst reports). By 2019, Salesforce was ranked number one in CRM, sales, service, marketing, analytics, visualization and other areas by IDC (Salesforce.com, 2020b) and other analysts. Its customers included many of the world's leading brands in every sector (Salesforce.com, 2020c).

These included business to consumer customers, such as

- Adidas, a SF customer since 2011, which is increasingly a digital brand though still with 50+ stores, and which uses SF's Commerce Cloud (which allows SF to manage customer information and tailor not only the dialogue but products to customer needs) and Service Cloud to support Adidas's 1100 service agents.
- Ticketmaster, which manages 40 million marketing and service communications a week using SF https://www.salesforce.com/customer-success-stories/ticketmaster/.

They also included business to business customers:

- Amazon Web Services (AWS), which has used Salesforce.com since AWS's foundation in 2006 to manage customers' journeys from the moment that they enquire. Ensuring integration between marketing and sales so that leads from campaigns are handled properly. AWS attributes part of its very rapid growth to suing this approach.
- Kone, a leading lift manufacturer and a customer since 2006, which uses Salesforce.com for its salesforce to manage relationships with customers. Kone has built an app called Sales Cockpit, which provides individual sales plans for every representative. SF is integrated with its Configure-Price-Quote system to facilitate management of the sales funnel. It has also developed an Innovation Transformation Centre which gives its 20,000 service operators quicker access to technical information.

Other customers include many of the world top information technology and communications and related companies (e.g. Mitel, Telstra, TMobile, Virgin Media Vodafone), but also tens of thousands of smaller businesses. Education and not for profit were also important sectors for Salesforce.com, e.g. for management of not-for-profit volunteers as well as donors, and in education for applicants and alumni and for distribution of digital learning material. Its total customer base was expected to approach 200,000 organisations by the end of 2020.

Salesforce.com's main products

These include (Salesforce.com, 2020e):

- Marketing Cloud - this includes a built-in connection to Google Cloud and Google's machine learning for analysis.
- AppExchange, which allows other companies to use marketplace apps, many of which are available free on SF's App store. The AppExchange is also where companies can enrol as partners to SF and where consultants can be found.
- Commerce Cloud - This provides support for ecommerce sites.
- Einstein Analytics, for analysing any data hosted with Salesforce.com.
- Pardot, specifically for business-to-business marketing.

Benefits of the Salesforce.com approach

The business benefits of using Salesforce.com as listed in its annual report (Salesforce.com, 2020d, p. 5-6) include:

- A multi-tenant application architecture designed to enable service offerings to scale securely, reliably and cost effectively.
- Rapid deployment and lower total cost of ownership with multiple releases per year deployed automatically with new features and functionality.
- Ease of integration and configuration with application programming interfaces that enable customers to integrate SF solutions with existing third-party, custom and legacy apps, as well as write their own application services that integrate with our solutions.
- Solutions designed to be intuitive, easy to use with minimal training and accessible across multiple hardware platforms such as the phone.
- Rapid development of apps without having to invest in hardware by providing infrastructure and development environments on demand.
- Continuous innovation through SF's Ideas Exchange, which is a forum to provide feedback and suggest new features for future service releases.
- Positive environmental impact with SF's multi-tenant cloud computing model that has a smaller environmental footprint than traditional hardware and software.

Technological approach (Salesforce.com, 2020d)

Salesforce solutions are delivered as scalable, cloud computing application and platform services on a multi-tenant technology architecture. Multi-tenancy is an architectural approach that allows a single application instance to be used

by many organizations, treating all customers as separate tenants who run in virtual isolation from each other. This approach allows the cost of delivering services to be kept down and allows the business to grow faster. Most Salesforce services use infrastructure designed and operated by Salesforce.com but in third-party data centres. It is well known for its open approach to applications development, with third party solutions available not only in its main focus areas of sales, customer service, marketing, and analytics, but also in finance, administration, human resources, enterprise resource planning (ERP). Salesforce's Customer 360 is an integrated platform covering sales, service, marketing, commerce, integration and analytics to give companies a single source of data about their customers. Its service offerings are designed to be intuitive and easy to use and can, Salesforce claims, generally be deployed quickly, configured easily and integrated with other platforms and enterprise applications. Salesforce.com sells through subscriptions, directly and through resellers. The could infrastructure component is provided by third parties.

Analyst views of development platform

Analysts rated Salesforce.com very highly as a development platform, particularly for its Lightning App Builder, which allows third-party developers to create, test and deliver apps (Salesforce.com, 2020d). This probably represents one of the most significant innovations of Salesforce.com and the approach is shared by AWS (give reference) and has been adopted by most other cloud providers (e.g. Microsoft). This approach is not simple. It involves providing companies with a range of tools they need to develop their own apps e e.g. tools for representing and automating processes, for modelling different parts of the organisation and information flows between them, for applying analytics, for form design etc. SF provides extensive guidance to clients as to how to do this.

Acquisitions

To maintain its position, Salesforce.com is, in its own words of the annual report (Salesforce.com.2020d), an acquisitive company, with Mulesoft, an integration platform company, Einstein (an analytics software company), and Tableau, a visualization software company, being among its recent acquisitions. All major information technology companies have similar lists of acquisitions (e.g. Microsoft, Google, Oracle).

Academic research on topics related to the rise and performance of Salesforce.com

As will be seen below, cloud computing is well-researched in academia. The new element added by Salesforce.com (and others

DaSilva *et al.* (2013) were amongst the first to see the important change that the Salesforce.com approach had created in the market, particularly versus the main competitor, Siebel. In their research, they identified how the market leader at the time, Siebel (then owned by Oracle), used a very focused market penetration strategy, including free trial, monthly subscription, with a strong focus on mobile access, and particularly openness to outside developers, to attack Siebel, enabling clients to customize the system to their needs much faster than with Siebel. Their main conclusion is that while technology is a disrupter, it is the business model that determines who wins, as Salesforce.com has itself realized when its rather complex business model started to give it trouble, Siebel's business model had been very profitable, with large companies spending big resources, with Siebel and/or with consultants, to integrate Siebel with their other systems and databases. When Siebel finally decided to respond with a SaaS offering, it prompted many clients to consider the alternative, Salesforce.com.

An important contribution that academics can make to the development of thinking in management is to create a taxonomy which allows classification. One early attempt, which referenced Salesforce.com and Amazon, eBay, Apple and Facebook amongst others, was that of Williams *et al.* (2008), who identified four area which needed classifying

- Service delivery - how the service is provided and the range of requirements for the consumer of the service to obtain different levels of the service.
- Service maturity - enthusiast, professional, consumer, and embedded systems.
- Malleability (provider and user) – the ability to adapt to changing market needs or requirements.
- Pricing and funding e.g. licensing, pay as you go.

Literature on ecosystem management

How the platform owner (in this case, Salesforce.com) manages its ecosystem of independent companies developing software to tun on its platforms is a critical part of the business model thinking. This has been well researched by Rickmann *et al.* (2014), in the context of the leader in Enterprise Resource Planning software, SAP. They conclude that

the “complementors” - those who complement the offer of the platform owner – need to be managed well i.e. signing up, clear processes etc., for the ecosystem to work. Böhm *et al.* (2010) investigate in depth the many different roles quired in a successful ecosystem, as follows: application provider, platform provider, market platform provider, infrastructure provider, consultant, aggregator, integrator and customer. One of the most interesting developments here has been the broadening of roles by many of these parties. Markus and Loebbecke (2013) propose a widening of the concept of ecosystem, using the term “business community”, composed of the overlapping ecosystems of competing ecosystem orchestrators in defined areas of business activity, typically industry sectors such as retailing. In such communities, business processes, they argue, tend to be standardised, so that platforms tend to be standardised to meet the needs of such communities. This is a controversial position, as it can be argued that the contribution of the giant platform owners such as Salesforce.com, Google and Amazon Web Services has been to standardize across industries and countries, with relatively like customization, often done by third parties (who may include customers). Meanwhile ecosystem orchestrators may use the services of other ecosystem orchestrators e.g. Salesforce.com’s use of Google and Amazon Web Services.

For customers, the use of such services also makes a big difference. The particular features of the cloud, such as fast set-up time, costs commensurate with use (conversion of fixed to variable costs), removal of capacity constraint, and unconstrained ability to innovate through availability of apps being generated by large numbers of ecosystem partners or indeed by the customers themselves, means that the customers can also change their business models and their financial returns (Chen and Wu, 2013).

The idea of digital disruption

Templeton *et al.* (2019) recent work on this topic has a close relation to the business model literature, particularly as it relates to disruption (Teece, 2010; Teece and Linden, 2017; Stott *et al.*, 2016), but casts its net more widely, identifying a research agenda which goes well beyond technology and IT firms, to encompass businesses whose competitive advantage and strategies depend on information and how they manage it or help their customers manage it. This does not necessarily involve the use of totally new technologies, although generally they do involve a very large number of incremental and patented innovations (“multi-inventions”) and substantial acquisition programmes, in order to develop new capabilities and to deliver value to customers, while also focusing on acquiring large numbers of new customers (Teece and Linden, 2017). Indeed, the requirement of scalability for creating success has in many cases meant that successful scale was only achieved when technologies were mature enough to sustain its delivery. The need to focus on culture and talent and more generally capabilities and the ability to reconfigure them (“dynamic capabilities”) is also emphasized by Templeton *et al.* (2019) and Teece (2017), but as they point out, this raises the question of where the boundaries of the firm lie, as often the talent needed resides in the ecosystem, and even with large partners who are partly competitors.

Literature on types of platform and their lifecycles

Evans and Gawer (2016) identified two main types of platform. These are as follows:

- Transaction platforms, which allow exchanges by customers e.g. eBay, Amazon Marketplace.
- Innovation platforms which supply a base technology and distribution system allowing others to add their innovations, e.g. Apple iTunes, Salesforce.com, AWS.

These platforms are usually proprietary, and open or closed to third party access, or a combination of the two (Teece, 2017). If a platform is fully integrated with hardware and content, it gives its owner more control and (in the case of Apple) more profit and the ability to create major innovations (e.g. Apple Watch). If the platform owner incorporates innovations made by third parties in the platform, as with Microsoft, this can discourage innovation by third party developers (Zhu, 2019).

Teece (2017) identifies a platform lifecycle, as follows:

- Birth: The value proposition is designed to capture value from an innovation, involving choice between different ways of providing value and choices about capabilities, revenue and cost models.
- Expansion: The business is scaled and refined and ways found to shut out rivals e.g. by focusing strong marketing resources on particular areas.
- Leadership: Customers and partners are kept engaged and the ecosystem is controlled.

- Self-Renewal: New ideas are introduced into the ecosystem.

It can be argued that Salesforce.com is moving to the final stage with the introduction of blockchain, analytics, AI and visualisation, nearly all through acquisition.

A further contribution to the taxonomy was made by Weiblen *et al.* (2012), who distinguished four models, as follows:

- Restricted model – the main service provider provides a unique service to the whole market.
- Controlled model – competing services are admitted, in a controlled manner.
- Delegation model - each service category is delegated to a specific partner or category manager.
- Open model – anyone can supply, provided they follow rules late down by the service provider.

The current situation with Salesforce.com, Apple and Amazon Web Services is the last model.

Literature on risk management

In assessing the impact of Salesforce.com, one approach is to review the risks that Salesforce.com has identified, as these identify the technical, market, legal and other developments that the management of Salesforce.com considers may in practice come to pass. These are enumerated in great detail in its annual report (Salesforce.com, 2020d), and include not only ones that are normal for large cloud computing vendors (cyber-security, service failures, privacy legislation), but ones specific to their strategy e.g. lack of third party capacity or a rise in the price of third party storage usage, failure to deliver strategy (particularly in respect of movements beyond the CRM market into analytics, voice, blockchain), acquisition strategy not delivering what was planned (upgrading not succeeding, customers not upgrading.

One of the biggest commercial risks for Salesforce.com is that its market is very competitive, and that price levels will fall. Salesforce.com counters the risk of customer attrition by encouraging customization through the AppExchange, the double-sided platform that connects independent software and services vendors and users, giving a wide range of customization options to specialized markets, in effect deploying a long-tail strategy, while continuing to develop new geographic markets (Delmond *et al.*, 2016). The highly competitive market in which Salesforce.com operates is identified as a risk in its annual report (Salesforce.com, 2020d), with competition coming not only from many other large software and services suppliers but also from its own customers and start-ups. The very high marketing and sales costs of Salesforce.com (45-46% of revenue for the three years leading up to 2020) (Salesforce.com, 2020d) reflect the intense efforts of Salesforce.com in marketing to large customers, also identified as a risk (Salesforce.com, 2020d, p. 25). A specific risk to a company whose finances are based on subscriptions is discontinuation by customers. Salesforce.com's strategy has been to ensure that customers can get everything they need from Salesforce.com and its ecosystem. Walther *et al.* (2018) carried out an empirical investigation identified that system quality was the most important correlate of intention to continue, followed by net benefits. Studies of intentions are of course notorious for their problems – particularly whether respondents follow their intentions.

Literature on app development and exchange

The innovation of opening up a software-as-a-service offering to the development of apps by other systems companies and clients themselves has also attracted the attention of academics. Iyer and Henderson (2010, 2012) identified the strategic benefits of Salesforce.com's App Store, which depended on opening up their APIs, including the co-creation benefits, and this competitive advantage was confirmed in later analysis by Marston *et al.* (2011). Xin and Levina (2008) identified some of the reasons for clients preferences for the SaaS model, including the fact that in the new model, the client who is often more proficient in customization is now responsible for making and maintaining the customized component, and because of this clear division of labour, the transparency of the transaction is improved and the client's need for the vendor to customize applications is avoided.

Literature on users as innovators

Although a growing number of gey literature studies are emphasising this (Rizza *et al.*, 2019: Cuatrecasas, 2019), in-depth case studies are rare. Once of the few in-depth studies is that of Schreieck and Wiesche (2017), whose case study of a bank adopting the open platform approach identifies that while a company can benefit from this approach, it also causes problems in relation to internal resistance and exposure of technology.

However, the information industry provides many examples of success in this area. The study by Li *et al.* (2016) of user innovation with Salesforce.com's IdeaExchange and Dell's IdeaStorm shows that success is correlated with the user innovators' prior participation and implementation rate, as well as factors related to particular innovations. Put simply, this implies that building an ecosystem which has a significant number of experienced user innovators is a route to success. A study focusing on Salesforce.com's IdeaExchange demonstrates that one of the important differences can be the number and quality of ideas contributed by employees, ideas contributed and promoted by employees more likely to be implemented than those contributed and only promoted by product users (Yan *et al.*, 2018).

Literature on the experience of users migrating to the cloud

One of the supposed strong points of the platform approach taken by Salesforce.com and others is the ease of migration from on-premise software to the cloud. However, the migration process can be as complex, difficult, expensive and protracted as any systems migration (Bibi *et al.*, 2012). This is not because of any issues with the platform approach, but because of the many problems associated with all migrations, including issues such as data quality, security, consolidation from many different on-premise systems, the fact that the new system is very different from the old one in terms of data definitions and other parameters, and organisational and skills problems. Researchers have identified the need for a clear methodology to achieve such migrations (Strauch *et al.*, 2014). Oredo and Nkihia (2014) identify that specific organisational competencies may be required to ensure successful exploitation of the approach, including security, disaster management, architecting, configuration, vendor management and training. Thompson (2017) focused on the strategic implications, finding that adoption of cloud computing often triggered a business transformation which became the main reason for cloud implementation. For smaller businesses, migration to the cloud seems to have been simpler and more clearly beneficial (Lacity and Reynolds, 2014) with SMEs are getting great benefits including cost avoidance and savings, rapid deployment, scalability, management simplicity, and better security and resiliency compared to in-house IT provision. Another important implication for clients is that the SaaS model tends to lead to more continued innovation by the supplier, partly due to the pricing model, with SaaS licensing using a subscription model, while perpetual licensing of on-premise software involves a one-time payment for a perpetual use license and optional additional payments for future upgrades, acting as a disincentive for users to upgrade (Choudhary, 2007).

Literature on financial and economic aspects of platform businesses

Bardhan *et al.* (2010) synthesise the many possible disciplinary approaches for analysing services management, providing a framework to guide future researchers. The disciplines used include computer science and IS, economics and finance, marketing, and operations and supply chain management. The need for a much stronger financial analysis is particularly acute. For example, a central theme of the business platform literature is the creation of value for customers and for the company itself. Yet many of the new generation platform companies generate very impressive performance in revenue terms, as in the case of Salesforce.com, profitability and costs are often a serious issue.

The need for a more incisive and comprehensive approach to analysis of revenue streams, over and above subscription revenues, was underlined early by Eurich *et al.* (2011), although, as Pomykalski (2019) points out, the strong correlation between market capitalisation and revenue rather than profit for platform companies poses a problem, which needs to be resolved by more in-depth case studies investigating the relationships between the financial variables. Cusumano *et al.* (2019) identify that while there has been a surge in literature analysing platform companies, often on a case study basis, there has been relatively little hard financial analysis, and conclude from their own analysis that while some platform companies do have successful financial profiles, while for others, the larger they become the more money they lose, while there are numerous failures.

The economic and social implications of the development of the large platform providers have been extensively analysed by economists and other social scientists, often in the context of governance, privacy and taxation issues (Poel *et al.*, 2018; Evans and Schmalensee, 2016; Stone *et al.,* 2017a), so here academics have made a significant and relevant contribution.

Literature specifically on Salesforce.com

Salesforce.com has been a focus for academic writers for at least ten years at the time of writing (Müller, 2012). Salesforce.com has been identified as a company which was in decline in the middle of the first decade of the century. Although it had many acquisitions to enhance the features of its product, which was then server-based i.e. resident on customers' systems, it had problems with multiple customizations of the product, making version control a problem, and

imitations in server capacity (Denning, 2011). It also had a cloud-based product, but this increased the complexity of Salesforce business, slowing its rate of innovation (as measured by releases of versions, down to one a year). In 2007 Salesforce.com adopted a different approach to managing its product projects (agile and scrum) and began to move entirely to the cloud, using third party capacity, liberating itself from the server-based solution. Cohn (2010) reports that this switch allows Salesforce.com to release 94 percent more features, with 38 percent more features per developer, and over 500 percent more value to customers compared to the previous year, while employee satisfaction jumped from very low to very high levels. Cohn attributes this change to leadership realizing that the company needed to move away from hierarchical bureaucracy to a much more open approach, involving staff more. This change was documented quite early by the founders of Salesforce.com (Benioff and Adler, 2009). Academics picked up the story e.g. Bansal and Rao (2018), Manchar and Chouhan (2017), Garg and Hanwate (2020).The move to a new approach to empowering applications development by customers, based on a strongly marketed platform, was noted by many academic commentators, such as Cusumano (2010), who also noted the potential long term conflict of interest e.g. between Google and Salesforce.com, if Google, whose platform now includes Salesforce.com's APIs, launches a CRM product.

The recent developments in Salesforce.com's strategy, particularly the Lightning Platform, App Exchange and App Cloud and the various programming and management services that facilitate these, have also been analyzed by academics (Sneha and Krishna Prasad, 2018). Several articles have appeared focusing on specific applications of Salesforce.com, focusing in general on ease of use, with usefulness considered as a given, such as customer satisfaction (Patole, 2019), university internships (Eason *et al.*, 2019), inventory management (Chennamaneni *et al.*, 2016), travel management (Verma *et al.*, 2020), specific industries e.g. healthcare (Shingade *et al.*, 2017), and particular applications (Yin, 2019; Patil, 2019; Akimova, 2019; Parihar *et al*., 2014; Wasekar and Ghonge, 2019). Much of this work is based on student theses.

The risks and problems inherent in the Salesforce.com approach, which has created very rapid growth, have also been subject to analysis. In particular, so far Salesforce.com has through its technical approach managed to makes the sales process for what is a complex arrangement (though much simplified by Salesforce.com's approach) less complicated than for traditional enterprise software products, using self-service sign-up, usage or plan-based pricing, minimal support requirements and any support depending upon revenue from the account (Traynor, 2017). An important element of Salesforce.com's approach is taking its own medicine to help it sell (Lightning Experience and Customer Success Platform) (Barlow, 2016; Evans, 2018). Nonetheless, with nearly 50% of its revenue spent on marketing and sales, this is one of the main risks facing the company, along with, the very low before tax profit margin and return on assets, as is the recent decline in both these figures. This may be partly attributable to recent acquisitions, consequently inflating the assets base, but these figures are still very low for a company at this stage in its history. Information researchers must be aware of the risk that popular platforms may become victims of their own success, spending very large amounts on growing their user base to maximise the network effect, but thereby reducing profit margins. The central question here is whether this figure could eventually be reduced, allowing some profit to shareholders.

Conclusions

Our conclusion is that academics have on the whole done well in researching the issues in the information technology industry that relate to the rise and performance of Salesforce.com and other platform companies. As Moeini *et al.* (2019) identify, there multi-disciplinary authoring teams help with relevance. In this case study, research integrating information technology, marketing, organisational and financial analysis would be particularly valuable, for example, to answer questions such as:

- Why has Salesforce.com's success in acquiring customers not been matched by its profit performance?
- Is switching from other approaches to CRM, whether using on-premise software or another cloud-based service, as easy and as beneficial as Salesforce.com claims, taking into account organisational and other issues
- Which elements of Salesforce.com's very high marketing and sales expenditure relate to simple lead generation and which to persuading managers in different positions in large companies to switch to their products.
- How serious are the security risks relating to use of Salesforce.com's customer database application?
- How important for Salesforce.com's success is the relationship with other platform companies with similar business models?

Implications for researchers and teachers in information management and technology

Perhaps the most important recommendation for researchers into information management and technology is to keep in touch with industry developments, not just as seen by other academics, but also as seen by others. This includes:

- Reviewing in detail the annual reports of the companies you are planning to research, identifying all the issues mentioned in them, from the perspectives of several academic disciplines, and including in this work the annual reports of competitors and customers.
- Reviewing the reports of information and financial analysts, not just the ones promoted by the companies that are the focus of your research, and bearing in mind that often suppliers sponsor reports from analysts.
- Noting the shifting structure of the industry, not just individual companies rising and falling, but shifts in roles, such as the re-emergence of users as important innovators and providers of apps to others, or the widening of roles of companies which were once confined to more specific areas (e.g. the expansion of the role of Accenture from being a consultancy and information technology services company to becoming the world's largest digital marketing agency).
- Noting how developments may follow individuals or groups of people e.g. in the case of Salesforce.com, Marc Benioff leaving Oracle to found Salesforce.com (Benioff, 2009), paying close but critical attention to the pronouncements of business leaders, particularly concerning their planned development of their companies.
- Paying close attention to the acquisition programmes of companies and what they mean for product ranges and clients.
- Using multi-disciplinary teams from the earliest stage of research, to facilitate analysis from different perspectives, not just be for the purpose of writing one article, but also for the downstream activities recommended by Moeini *et al.* (2019), particularly translation and diffusion of research. Teaching should also be included in this. How can it make sense to teach or learn about the rise of platforms using only information technology concepts, without covering the many organisation, financial and marketing issues?
- Involving textbook authors – textbooks are central to ensuring that what students learn is relevant to their possible future work in information technology or management. One of the dominant works is that of Laudon and Laudon (2020). The book is now in its 16th edition, and a new edition is published almost every year, with content substantially updated. It was one of the first textbooks with significant coverage of cloud computing, and the work has many references to the leading suppliers using this approach, including Salesforce.com, with significant coverage of cloud computing.
- Engaging practitioners, not by asking them if they can use the research that is being planned but by involving them in the process of determining the research agenda. It is particularly ineffective to ask them to fund it, when they have no evidence of value. Funding should only be expected after a period of building a relationship and demonstrating value and relevance. Here efforts may be hampered by some practitioners building relationships with universities because it suits their individual position and not that of the corporation. The recommendation to build relationship applies particularly to young researchers, who should attend commercial conferences, read listen to what concerns are, read the industry press, and communicate it using the strategies recommended by Moeini *et al.* (2019).
- Avoid doing what practitioners would regard as unusable primary research focused on demonstrating the ability to apply arcane philosophies of knowledge, theories and methodologies, , but focus on producing interesting documents that are likely to be of interest to industry thought leaders (Tzempelikos *et al.,* 2020).
- Consider avoiding primary research, instead focusing on evaluation and interpretation of existing research, both academic and practitioner.
- Use the case study approach, as in this article, but one which does not rely on interviews with employees of the case study company, but relying more on the views of critical analysts. This helps because it identifies not just the positives but also the negatives. As we see above, the finances of Salesforce.com raise many unanswered questions.

If we take the multidisciplinary approach to looking at the future, as recommended by Moeini *et al.* (2019), we must include in our thinking about relevance in the research agenda the perspective and research of academics, analysts and other experts in areas such as economics, finance, organisational behaviour and more generally human resources, psychology, and marketing, who are focusing on the same industry developments. For example, how should we combine marketing, financial and economic analysis to research platform companies, and in particular to identify more concisely

the determinants of success and failure, as many platform companies do fail (Cusumano *et al*., 2019). Our view is that evolutionary economists and financial analysts have a strong role to play here.

Implications for practitioners

People in business learn about business ideas and concepts in different ways, from when they start to learn during their education, to their early experiences as managers, when they are often witnessing their company's success or failure in using ideas, to when they become more senior managers, taking decisions using concepts and ideas. Or they may start businesses and make decisions about the use of concepts very early on in their business careers. In either case, they may do this consciously or unconsciously. This has applied particularly to the use of the term "business model", which was already being discussed in terms of "rules of the game" well before the term "business model" was coined. However, once leading authors started to formalise the concept, it became much more usable by business, and now many business (from large companies to start-ups) use it as a fundamental part of their business planning process.

So, just as some businesses are becoming more adept at developing information technology for others as well as for themselves, they could be more adventurous in terms of finding and using concepts. In their strategizing, if academics have not done the translation, perhaps companies should, and this includes becoming much more adept at searching publications using Google Scholar. Larger companies that use consultants can give this as a job to consultants who know how to do it (Stone, 2011, 2013, 2016).

One practical recommendation from this is that companies – at least larger companies – should in their thought leadership work devote some time and resource to staying in touch with what universities are producing. This should not be just (as is too common) sponsoring universities to produce thought leadership material or sending managers to give lectures on programmes, to improve the brand image of the company for recruitment purposes. It should include concerted efforts to find which universities and/or members of their staffs are producing relevant material and perhaps asking members of staff to translate that material into actionable ideas for the company.

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